

Lahontan Regional Water Quality Control Board

October 30, 2013

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**ACCEPTANCE OF ACTION PLAN WITH ADDITIONAL CONDITIONS AND
INVESTIGATIVE ORDER R6V-2013-0087 REQUIRING TECHNICAL REPORTS
UPON PACIFIC GAS AND ELECTRIC (PG&E) IMPLEMENTING THE ACTION PLAN
FOR THE AREA WEST OF THE NORTHWEST FRESHWATER INJECTION SYSTEM,
PG&E COMPRESSOR STATION, HINKLEY, SAN BERNARDINO COUNTY
(WDID 6B369107001)**

Lahontan Regional Water Quality Control Board (Water Board) staff has reviewed PG&E's September 24, 2013 Revised Action Plan required by letter dated August 2, 2013 (Action Plan). This Order provides acceptance of the Action Plan with conditions, and requires PG&E to submit a technical report after implementing the Action Plan.

The technical reports ordered in this letter are required pursuant to section 13267 of the Water Code and are to describe the effectiveness of the Action Plan to reduce hexavalent and total chromium concentrations west of the NWFI system. The report is to provide the information necessary to determine whether the Action Plan is working to reduce the chromium in the western area.

Water Board staff continues to find hexavalent and total chromium concentrations above background levels west of the NWFI system. We acknowledge there are several hypotheses for these increased chromium concentrations and there continues to remain uncertainty around the actual causes of the chromium increases in this area. However, based on the current information, the Water Board has determined there is insufficient evidence to refute the conclusion that the increasing chromium concentrations are related to PG&E's actions. Until such time as new information is gathered as part of the Background Study, the Water Board will not consider changing its determination.

A. ACTION PLAN CONCURRENCE WITH ADDITIONAL CONDITIONS

The Water Board continues to urge PG&E to take any and all measures possible to contain chromium plume migration and to remediate elevated hexavalent and total chromium concentrations as required in CAO No. R6V-2008-0002. The Action Plan submitted to address the increasing chromium concentrations west of the NWFI system is accepted with the following conditions for specific actions.

1. Maintain and/or Enhance Freshwater Injection

The NWFI system was installed to assist with keeping PG&E's chromium release in groundwater east of the NWFI system. Since chromium increased west of the NWFI system at the same time decreases in freshwater injection occurred, returning to previous or increased injection rates should reduce the chromium concentrations west of the system.

The Action Plan explains that PG&E intends to install a new injection well at IN-03 since sand intrusion may render the well inoperable in the future. PG&E, at the Water Board's request, has also agreed to install an additional injection well near IN-02 to increase the total amount of freshwater injection. The Action Plan states that PG&E will conduct chemical well rehabilitation as the specific injection capacity of wells in the system decline over time.

The Water Board accepts PG&E's proposed actions to install IN-03R and IN-02R with two conditions:

- a. Locate the new injection wells to prevent potential gaps and reduce the current 1,200 feet distance between injection wells.
- b. Complete installation, system connections, and begin injection by April 2, 2014.

In its Action Plan, PG&E again requests approval to use Aqua Gard in their injection well chemical rehabilitation process. On October 24, 2013 PG&E submitted additional information clarifying that the Aqua Gard process involves use of 100% carbon dioxide in a gas or cryogenic form (essentially, pressurized dry ice) to dislodge scale from well casings. The Water Board agrees with the use of Aqua Gard for well rehabilitation. To verify no changes in water quality occur from its use, monitoring of pH and electrical conductivity during well rehabilitation is required as part of this Order.

2. Additional Extraction in the East

The Action Plan proposes to enhance eastward gradient of groundwater flow by increasing groundwater extraction east of the NWFI system. This action would assist current efforts to prevent the westward flow of chromium in groundwater. PG&E proposes to discharge the extracted groundwater to new agricultural treatment units. This action is contingent upon receiving new WDRs by the Water Board (anticipated in March 2014), and biological clearance from fish and wildlife agencies. The Water Board agrees that increasing extraction in the east will assist in preventing the westward flow of chromium in groundwater. However, the unknown schedule to achieve biological clearances at new treatment units may make implementation of this action unrealistic as a viable option. We encourage PG&E to consider all options to expedite increased extraction and disposal of this water.

PG&E also proposes in the Action Plan to increase groundwater extraction in the east along and east of Mountain View Road and discharge to new treatment units to be located in the South Central Re-Injection Area (SCRIA). This proposal, however, may have the same biological limitations as discussed above. Water Board staff would also

like PG&E to consider discharge to existing In-situ Remediation Zone (IRZ) injection wells within the SCRIA, since this alternative can likely begin within a few months. The SCRIA is a permitted IRZ between Community Boulevard and Frontier Road under General WDR Board Order No. R6V-2008-0014. Extraction wells and pipeline to the SCRIA are already in place and would not require additional permitting from the Water Board. Current extraction and discharge rates to the SCRIA are up to 62 gallons per minute (gpm). Because PG&E's April 7, 2009, Notice of Applicability under Board Order No. R6V-2008-0014 allows PG&E to discharge up to 110 gpm, PG&E may increase its discharge to the SCRIA by an additional 48 gpm. Water Board staff have discussed these options with PG&E staff and are open to these and other alternatives that will allow PG&E to increase extraction rates as soon as possible.

3. Aquifer Pump Testing

In its Action Plan, PG&E states that it will conduct aquifer pump testing at agricultural well 27-03 at the Heifer Ranch to determine hydrogeologic conditions needed for the design of a potential western extraction system. Well 27-03 is screened in both the upper aquifer and fractured bedrock. The Action Plan contains a scope of work for the aquifer pump testing that includes measuring water levels in existing wells and considers installing piezometers to monitor groundwater levels when well 27-03 is pumped.

At the end of the September 19, 2013 Technical Working Group meeting in Hinkley, CH2MHill requested approval to install the piezometers mentioned in the original Action Plan, prior to submittal of the revised Action Plan on September 24, 2013. Lisa Dernbach of this office provided this approval conditional to the piezometers being installed in a location north of the agricultural well where few monitoring locations existed. The response from CH2MHill was that the suggested location should not be a problem and work to install the piezometers was planned to proceed immediately.

The Water Board accepts PG&E's scope of work for the Aquifer Pump Test at agricultural well 27-03 at the Heifer Ranch with the following conditions.

- a. Install at least one piezometer at two differing depths north of the agricultural well and on the Heifer Ranch property, since few other wells exist in this location compared to east and west locations. New piezometers shall measure the water table elevation and the extent of pumping by the agricultural well.
- b. To evaluate the extent of hydraulic capture out towards Acacia Street to the north, where hexavalent and total chromium concentrations exceeded background levels in second quarter 2013, conduct a second constant discharge test at a higher pumping rate than in the first discharge test. The results of the higher rate pumping test will be needed to evaluate effectiveness and to design a western extraction system for reducing chromium concentrations. PG&E must conduct the second pumping test as described in the Action Plan unless Water Board staff agrees that sufficient information from the first pumping tests adequately demonstrates that additional testing is unnecessary.

- c. If chromium concentrations exceed 3.1 ppb hexavalent chromium or 3.2 ppb total chromium in the extracted water, PG&E may only discharge it to a permitted facility such as those areas with WDRs previously issued by the Water Board.

4. Add Western Extraction

Following the aquifer pumping test, the Action Plan discusses the option of extracting groundwater west of the NWFI system to further reduce chromium concentrations in groundwater, if needed. Groundwater extraction could occur at the Heifer Ranch agricultural well (27-03) or potential extraction wells installed in the western area. Extracted water could be piped east and applied to existing, new or expanded agricultural treatment units.

The aquifer pump test will have only limited effect on chromium concentrations since the test is expected to take place over just seven days. Additional actions, although interim, may be needed to reduce chromium concentrations in groundwater which threaten nearby domestic wells.

The Water Board accepts the plan for western extraction as discussed in the Action Plan to reduce chromium concentrations in groundwater with conditions on disposing the extracted water.

- a. PG&E must consider and recommend additional interim actions to implement in the first half of 2014 to reduce hexavalent chromium concentrations to below 3.1 ppb.
- b. PG&E shall propose and implement other options for disposing the extracted water if agricultural treatment units cannot be used for disposal within the first six months of 2014. Options may include on-site storage tanks and transport to a permitted facility, such as proposed for water disposal from the aquifer pump test. Another option would be to use a mobile treatment facility to reduce chromium concentrations to less than background concentrations prior to disposal to ground or into injection wells.

5. Other Proposed Investigations

The Action Plan contains proposed additional investigations for determining hydrogeologic conditions and potential chromium sources west of the NWFI system, including geophysical surveys, pore water sampling, etc. Water Board staff considers these proposed actions as not related to reducing chromium concentrations in groundwater west of the NWFI system. These investigations are part of the revised background study under consideration.

B. REQUIRED TECHNICAL REPORT – ACTION PLAN IMPLEMENTATION

Pursuant to section 13267 of the Water Code, PG&E is hereby ordered to submit to the Water Board a technical report by **January 10, 2014**, containing the following items on implementing its Action Plan required pursuant to CAO No. R6V-2008-0002. This technical report is necessary to investigate the water quality in the Hinkley basin during

PG&E's additional investigation and remediation activities proposed by the Action Plan to reduce/cleanup elevated chromium. The need for this technical report outweighs the burden on PG&E to report on implementing its Action Plan.

1. Maintain and/or Enhance Freshwater Injection

PG&E is to include the following information in its technical report:

- a. A full description of completed and planned actions to install two additional injection wells to the NWFI system. The report shall contain a written analysis describing why specific locations were chosen for wells IN-03R and IN-02R in relation to the other injection wells in the system.
- b. A description of rehabilitation chemicals (Aqua Gard), and volumes that were discharged, if applicable, into each new injection well in the NWFI system. Report results of pH and electrical conductivity (EC) analyses taken before, during and following well rehabilitation and purging. Analyses must continue until pH and EC stabilize.

2. Additional Extraction in the East

PG&E is to include in its technical report a full description of completed and planned actions to increase groundwater extraction east of the NWFI system and propose disposal methods to be implemented during first half 2014.

3. Aquifer Pump Testing

PG&E is to include in its technical report information on the aquifer pump testing that includes the following:

- a. A full and complete description of the aquifer pumping tests, consisting of a step drawdown test and two constant rate discharge tests. Also describe downhole measurements and water samples results coordinated with the U.S. Geological Survey and collected from the Heifer Ranch agricultural well.
- b. A full and complete description of the groundwater area affected by each pumping test.
- c. Site maps showing the location of all wells used to measure groundwater level during pumping tests. Show drawn areas of groundwater affected by each pumping test.
- d. An analysis describing why PG&E chose the specific locations for the newly installed piezometers.
- e. A full and complete description of the disposal of groundwater extracted during pumping tests, including volume disposed, laboratory results of water samples, dates and location of disposal. Include a site map displaying the disposal location(s).

4. Add Western Extraction

PG&E is to include in its technical report information on adding western extraction that includes the following:

- a. Describe what interim actions PG&E is recommending to implement during the first half 2014 to reduce hexavalent chromium concentrations below 3.1 ppb.
- b. A full and complete description of the disposal of groundwater extracted, including volume disposed laboratory results of water samples, dates and location of disposal. Include a site map displaying the disposal location(s). Describe what other options for disposing the extracted water were considered any why the disposal method used was chosen.

5. Additional Reporting Requirements

In its technical report, PG&E shall comply with the following:

- a. Describe fully in the text portion of the report data and information in tables and figures.
- b. All site maps and figures must comply with mapping requirements according to previous Water Board orders. This was not done in the Action Plan and needs to be corrected in future reports to the Water Board.
- c. The technical report shall be signed and stamped by a California licensed geologist or civil engineer.

C. REQUIRED TECHNICAL REPORTS– HINKLEY SCHOOL WELLS

The Action Plans states PG&E plans to continue monthly sampling of Hinkley School wells for the next six months, as discussed at the September 13, 2013, meeting with Water Board staff. Pursuant to section 13267 of the Water Code, **PG&E is hereby ordered to submit to the Water Board monthly technical reports by the tenth of each month from November 2013 to April 2014**, to cover the sampling periods of fourth quarter 2013 and first quarter 2014. PG&E has been testing the school wells monthly in the recent past; this Order requires PG&E to continue the testing it has already been conducting for another six months. These monthly technical reports are necessary to investigate the water quality in the Hinkley basin during PG&E's initial cleanup of chromium on the western area of the NWFJ system. Monthly technical reports shall include the following information: sampling date, well number, description of laboratory results, copy of laboratory sheet with results, and tabulated well results over at least six months. The need for these technical reports outweighs the burden on PG&E to report on implementing its Action Plan.

Failure to furnish or provide a technical report meeting the requirements in this investigative Order may subject PG&E to civil liability up to \$1,000 per day for each violation pursuant to Water Code section 13268. Failure to implement the Action Plan may subject PG&E to civil liability up to \$5,000 per day for each violation pursuant to

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-7- Investigative Order No. R6V-2013-0087

Water Code section 13350. The Water Board reserves its right to take any enforcement action authorized by law.

If you should have any questions about this conditional approval of the Action Plan or the required technical report, please contact me at (530) 542-5436 or Lauri.Kemper@waterboards.ca.gov, or contact Staff Counsel Laura Drabandt at (916) 341-5180 or Laura.Drabandt@waterboards.ca.gov.



LAURI KEMPER, P.E.
ASSISTANT EXECUTIVE OFFICER

Enclosure: Section 13267 Fact Sheet

cc: PG&E Hinkley Lyris List (and web posting)
PG&E Technical Mail List
Kevin Sullivan, PG&E
Tom Wilson, PG&E

LSD/adw/T: R6V-2013-0087 Action Plan approval 13267 (lk)(ld)(sue)
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